



## Apparatus for blow-moulding hollow bodies

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**Inventor:** ROSE PETER  
**Applicant:** HEIDENREICH & HARBECK GMBH  
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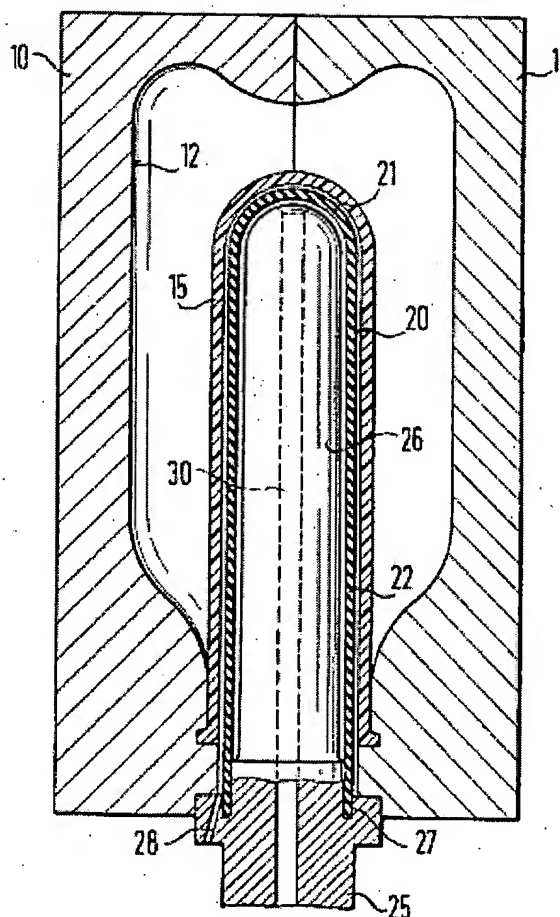
Also published as:

 US3918876 (A1)  
 FR2224279 (A1)

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Abstract not available for DE2316593  
Abstract of corresponding document: **US3918876**

Blow-moulding apparatus for blow-moulding elongated blanks of preheated thermoplastic material by; the use of a resilient bellows located upon a mandrel. The wall thickness of the bellows radially increases toward the bellows' closed end wherein initial expansion of the bellows and parison is in an elongated direction prior to significant radial expansion, and the interior of the parison is vented to insure complete contact between the bellows and parison.



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54

Bezeichnung: Vorrichtung zum Blasformen von Hohlkörpern

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Zusatz zu: —

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Ausscheidung aus: —

71

Anmelder: Heidenreich & Harbeck Zweigniederlassung der Gildemeister AG,  
2000 Hamburg

Vertreter gem. §16 PatG: —

72

Als Erfinder benannt: Rose, Peter, 2359 Henstedt-Ulzburg

Prüfungsantrag gemäß § 28 b PatG ist gestellt

DT 2316593

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**Family list****6** family members for:**DE2316593**

Derived from 3 applications.

- 1 Apparatus for blow-moulding hollow bodies**  
Publication info: **DE2316593 A1** - 1974-10-24  
**DE2316593 B2** - 1977-08-18  
**DE2316593 C3** - 1978-06-01
- 2 Apparatus for blow-moulding hollow bodies**  
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**FR2224279 B1** - 1978-03-24
- 3 Apparatus for blow-moulding hollow bodies**  
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# United States Patent [19]

Rose

[11] 3,918,876

[45] Nov. 11, 1975

[54] APPARATUS FOR BLOW-MOULDING  
HOLLOW BODIES

3,816,046 6/1974 Farrell ..... 425/389 X

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[51] Int. Cl.<sup>2</sup> ..... B29D 23/03

[58] Field of Search ..... 425/389, 390, DIG. 14

[56] References Cited

UNITED STATES PATENTS

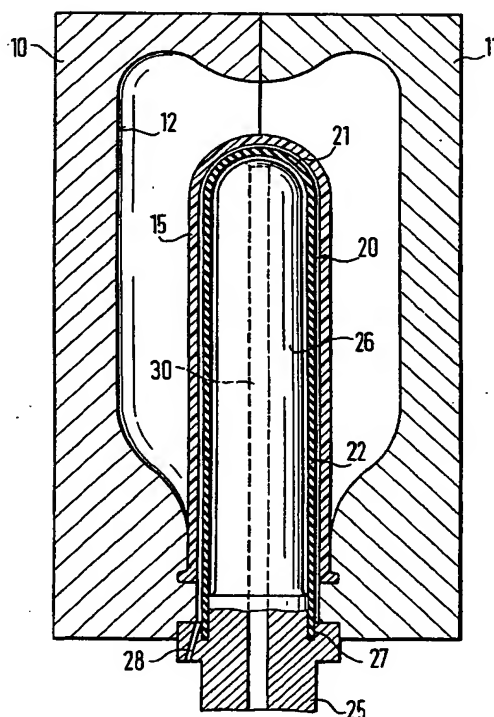
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[57]

## ABSTRACT

Blow-moulding apparatus for blow-moulding elongated blanks of preheated thermoplastic material by the use of a resilient bellows located upon a mandrel. The wall thickness of the bellows radially increases toward the bellows' closed end wherein initial expansion of the bellows and parison is in an elongated direction prior to significant radial expansion, and the interior of the parison is vented to insure complete contact between the bellows and parison.

1 Claim, 1 Drawing Figure



# PATENT SPECIFICATION

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(52) Index at acceptance

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(19)



## (54) IMPROVEMENTS IN OR RELATING TO BLOW MOULDING APPARATUS

(71) We, FARRELL PLASTIC MACHINERY CORPORATION, a corporation of the State of New Jersey, United States of America of 1 Cory Road, Morristown, New Jersey 07960, United States of America do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to blow moulding apparatus.

Conventional injection blow moulding apparatus operates through a cycle beginning with the injection of a plastics material into an injection mould containing a core rod. A parison is formed around the core rod, and the injection mould then opens and permits the core rod to move to the next station of the blow moulding machine at which the next step of the moulding process is performed.

The second station is usually a blowing mould in which the parison is blown to the desired shape of a finished article; and when the blown article cools sufficiently, it is removed from the blowing mould and transferred to a stripper station. At the stripper station the blown article is removed from the core rod.

One of the limitations on the speed of a conventional cycle of such an injection blow moulding apparatus is the time required to cool the blown article sufficiently to remove it from the blowing mould prior to introduction to the stripper station. The present invention seeks to provide blow moulding apparatus, in the operation of which it is possible to cool the blown article more quickly than has previously been possible and thereby reduce time cycle of the apparatus and correspondingly increase the production of the blow moulding apparatus.

According to one aspect of this invention there is provided a blow moulding

apparatus including a core rod support, a core rod assembly comprising a core rod for supporting a parison to be blow moulded, means near one end of the core rod for connecting it with the core rod support, an elastic balloon that fits closely over the core rod when said balloon is deflated, and means for supplying fluid under pressure from the core rod to inflate the balloon and the parison thereof and including a shroud having a shape similar to the shape of the article to be blown from the parison but somewhat larger, and means to supply a flow of cushioning fluid through the shroud and into contact with the outside of the blown parison within the shroud, the shroud having a multitude of perforations opening through the surface thereof that confronts the blown parison inside the shroud and through which, in operation of the apparatus streams of the cushioning fluid flow into contact with the outside surface of the blown parison.

In a preferred embodiment of the invention, an elastic balloon is attached to a core rod assembly in position to hug the core rod when the balloon is deflated. When a parison is formed over the core rod, it is applied over the outside of the collapsed balloon and over a short length of the core rod assembly beyond the end of the balloon. This short length of the parison is the portion which forms the mouth or neck of the article to be blown and it is a portion of the parison which is not expanded in the blow mould.

The balloon has important advantages. One is that it permits the blown article to be cooled from the inside. Cooling fluid can be circulated through the inside of the balloon during a blowing operation and immediately after the completion of the blowing operation.

The core rod of a preferred embodiment of this invention is constructed so that